

IN THE UNITED STATES DISTRICT COURT
FOR THE EASTERN DISTRICT OF TEXAS
MARSHALL DIVISION

**Microbes, Inc. and
Rhizogen L.L.C.**

Plaintiffs,

V.

**The Espoma Company,
Advanced Microbial Solutions L.L.C.,
and Calloway's Nursery, Inc.**

Defendants.

[illegible]

Civil Action No. 2:09-CV-237

Jury Trial Demanded

PLAINTIFFS' OPENING CLAIM CONSTRUCTION BRIEF

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I. INTRODUCTION:

Plaintiffs Microbes, Inc. and Rhizogen L.L.C. filed this suit for infringement of three patents. The patents relate to novel fertilizer compositions and methods of using fertilizer compositions. Plaintiffs have also charged one of the Defendants, Espoma, with false patent marking involving the same products that are accused of infringement. Defendants Espoma and AMS have filed false patent marking counterclaims against Plaintiffs based, at least in part, on the allegation that the manure in Plaintiffs' fertilizer products is "sterilized" and therefore not "decontaminated." As discussed below, the proposed claim constructions are relevant to both the patent infringement claims and the false patent marking counterclaims.¹

II. THE PATENTED TECHNOLOGY:

This case involves patented fertilizers and methods of applying fertilizers to plants to increase yield and increase the concentration of certain microorganisms in the soil next to a plant. Plaintiffs are currently asserting fourteen claims found in three different patents (see Exhibit 2). All the claims share a core novel feature; that is, they all recite a fertilizer composition that includes both "decontaminated manure" and "Bacillus spores." As will be apparent from this brief, the definitions of both of those terms is important to the case. Claim 20 of the '179 patent and Claim 1 of the '994 patent are representative claims:

Claim 20 of the '179 patent (emphasis added):

¹ In this brief, Plaintiffs will endeavor to provide the Court with some factual context for the claim constructions, by identifying how they might impact either infringement or invalidity theories. Plaintiffs are doing this to provide this court with a useful factual context for its claim construction. In *Every Penny Counts, Inc. v. American Express Co.*, 563 F.3d 1378 (Fed. Cir. 2009), cert. denied, 130 S. Ct. (2009), the Federal Circuit held that it was not error for the district court to make reference to the accused products at the Markman hearing. The court indicated that mere knowledge or awareness of the accused products and how they related to the claim constructions was not legal error. On the other hand, there have been instances where a lack of factual context was legal error relative to a claim construction. In *Jang v. Boston Scientific Corp.*, 532 F.3d 1330 (Fed. Cir. 2008) a consent judgment of non-infringement was reversed and remanded because there was insufficient factual context for the court of appeals to evaluate how particular claim constructions influenced infringement and non-infringement.

A solid fertilizer composition for plant production comprised of **decontaminated manure, Bacillus spores**, humic acid and, optionally, one or more N--P--K compounds, wherein the Bacillus spores are from strains of probiotic Bacillus bacteria that enhance beneficial microbial populations within a rhizosphere of a plant.

Claim 1 of the '994 patent (emphasis added):

A fertilizer composition comprised of **decontaminated manure and Bacillus spores** wherein the decontaminated manure has a total aerobic/facultative viable plate count reduced by 2-4 logs (100 to 10,000 times) compared to raw manure.

The parties originally agreed to definitions for eleven (11) terms; and originally identified a total of twenty-seven (27) disputed terms. The original list of disputed terms was based on the twenty-six (26) claims that Plaintiffs' identified as being infringed in their Initial Disclosures of Asserted Claims pursuant to Patent Local Rule 3-1. Since then, Plaintiffs have narrowed their list of asserted claims to the fourteen claims listed in Exhibit 2.² Accordingly, because some of the original disputed terms were only in the withdrawn claims, and are no longer relevant to the asserted claims, Plaintiffs have removed them from the list of disputed terms that require construction.

III. APPLICABLE LEGAL FRAMEWORK:

A. Law concerning claim construction

A claim term is construed to mean what a "person of ordinary skill in the art . . . at the time of the invention" would understand the term to mean, after having read the term "not only in the context of the particular claim in which the disputed term appears, but in the context of the entire patent, including the specification." *Phillips v. AWH Corp.*, 415 F.3d 1303, 1313 (Fed. Cir. 2005) (en banc). Claim construction focuses primarily on the claims themselves, the patent

² Plaintiffs have notified Defendants that they do not intend to assert any of the claims of the '179 patent except for claim 20, and have also withdrawn their allegations that claims 15, 16, 19 and 20 of the '994 patent are infringed.

specification, and the file history. *See id.* At 1314, 1317-18. Moreover, a proposed claim construction that excludes a preferred embodiment “is rarely, if ever, correct.” *Vitronics Corp. v. Conceptronics, Inc.*, 90 F.3d 1576, 1583 (Fed. Cir. 1996).

B. Law concerning indefiniteness

To overcome the statutory presumption that a patent’s claim are valid, a defendant must prove invalidity by clear and convincing evidence. *See Ultra-Tex Surfaces, Inc. v. Hill Bros. Chem. Co.*, 204 F.3d 1360, 1367 (Fed. Cir. 2000). Specifically, to prove a claim invalid for indefiniteness, a defendant must prove by clear and convincing evidence that “one of ordinary skill would not understand what is included” within the claims. *N. Am. Vaccine, Inc. v. Am. Cyanamid Co.*, 7 F.3d 1571, 1579 (Fed. Cir. 1993).

If one skilled in the art “would understand the bounds of the claim when read in light of the specification,” the claim is not indefinite, *Miles Lab., Inc. v. Shandon, Inc.*, 997 F.2d 870, 874-75 (Fed. Cir. 1993). Indeed, a claim term is not indefinite if it “can be given any reasonable meaning.” *Young v. Lumenis, Inc.*, 492 F.3d 1336, 1345 (Fed. Cir. 2007). If the claim is subject to construction – in other words, if it is not insolubly ambiguous – it is not invalid for indefiniteness. *See Bancorp Services, L.L.C. v. Hartford Life Inc. Co.*, 359 F.3d 1367, 1371 (Fed. Cir. 2004). Claims are indefinite only if reasonable efforts at claim construction prove futile, and “close questions of indefiniteness in litigation involving issued patents are properly resolved in favor of the patentee.” *Id.* at 1371; *accord Exxon Research & Eng’g Co. v. United States*, 265 F.3d 1375 (Fed. Cir. 2001).

If the Court can construe the terms here and give them “any reasonable meaning” – which even Defendants admit can be done for many of the claims – they are not indefinite. Plaintiffs have demonstrated below a reasonable construction for each of the relevant terms. The

terms, therefore, are not indefinite. Because Defendants bear the burden of proving indefiniteness by clear and convincing evidence through a motion for summary judgment or otherwise, Plaintiffs will defer detailed discussion about whether many specific terms are indefinite until after Defendants have tried to meet their evidentiary burden – something they cannot do given the reasonable constructions set forth below.

C. Law concerning obvious typographical errors

Courts have authority to correct certain types of patent errors, sometimes referred to as “*Essex* errors,” after *I.T.S. Rubber Co. v. Essex Rubber Co.*, 272 U.S. 429 (1926). In accordance with the *Essex* case, the Federal Circuit has held that, “if the correction is not subject to reasonable debate to one of ordinary skill in the art, namely through claim language and the specification, and the prosecution history does not suggest a different interpretation, then a court can correct an obvious typographical error.” *Ultimax Cement Mfg. Corp. v. CTS Cement Mfg. Corp.*, 587 F.3d 1339, 1353 (Fed. Cir. 2009) (correcting an error where a comma was left out between the symbols for fluorine and chlorine in a claimed formula); *see also Novo Indus., L.P. v. Micro Molds Corp.*, 350 F.3d 1348, 1357 (Fed. Cir. 2003) (“[a] district court can correct a patent only if (1) the correction is not subject to reasonable debate based on consideration of the claim language and the specification and (2) the prosecution history does not suggest a different interpretation of the claims”). In this case, there are several obvious typographical errors in certain claims and, accordingly, Plaintiffs are requesting that this Court include the corrections of those terms as part of its Markman order.

IV. AGREED DEFINITIONS OF SELECTED TERMS:

As set forth in the PR 4-3 Joint Claim Construction and Prehearing Statement (Exhibit “A”), the parties have agreed that the following terms may be construed as set forth below.

Term	Agreed Construction
Aerobic	The term “aerobic” means capable of growing in the presence of oxygen.
facultative	The term “facultative” means capable of growing in the presence or absence of oxygen.
Viable	The term “viable” means living.
<i>Bacillus</i>	This term means bacteria belonging to the genus <i>Bacillus</i> .
Cfu	This term means “colony forming units.”
Solid	This term means having a solid form, such as prills or pellets, and not having a slurry or liquid form.
rhizospherer	This term means “rhizosphere”
non-<i>bacillus</i>organisms	This term means “non- <i>bacillus</i> organisms”
non-<i>bacillus</i>beneficial organisms	This term means “non- <i>bacillus</i> beneficial organisms”
<i>Bacillus</i>sporeS	This term means “ <i>Bacillus</i> spores,” as construed separately.
Nitrogen fixing bacteria	This term means bacteria that are able to make nitrogen available to a plant.

V. THE SPECIFICATION DISCLAIMER DOCTRINE DOES NOT APPLY:

Defendants allege that every claim that recites “decontaminated manure” (all the claims) should be restricted based on the doctrine of “disclaimer” or “disavowal.” That is, in addition to proposing their interpretation of the term “decontaminated manure” (which is discussed in Section VI-A below), Defendants are proposing the following disclaimer:

If the manure is derived from ruminant animals such as cattle and sheep, or from broiler chickens, the manure must be treated to be free from straw or other forms of litter or bedding.”

Plaintiffs submit that the so-called “disclaimer doctrine” (also sometimes referred to as “disavowal”) does not apply to the fertilizer compositions in this case. A patentee can limit a claim with an intentional disclaimer, or disavowal, of claim scope. *Phillips*, 415 F.3d at 1316; *Fiber Optic Designs, Inc. v. Seasonal Specialties, LLC*, 172 Fed Appx. 995, 2006 WL 524073 (Fed. Cir. 2006) (unpublished). According to the disclaimer doctrine, only when the patentee makes “clear and unmistakable” statements, in prosecution or the specification, limiting the meaning of a claim term will the courts limit the claim term to exclude the disclaimed matter. *Sandisk Corp v. Memorex Products, Inc.*, 415 F.3d 1278, 1286 (Fed. Cir. 2005); *Omega Eng’g, Inc. v. Raytek Corp.*, 334 F.3d 1314, 1325 (Fed. Cir. 2003); *see also Paice LLC v. Toyota Motor Corp.*, 504 F.3d 1293, 1308 (Fed. Cir. 2007). That is, claims “will not be read restrictively unless the patentee has demonstrated a clear intention too limit the claim scope using words of expressions of manifest exclusion or limitation. *Arlington Indus. Inc. v. Bridgeport Fittings, Inc.*, ___ F.3d ___, 2011 WL 179768 (Fed. Cir. 2011), *citing Martek Biosciences Corp. v. Nutrinova, Inc.*, 579 F.3d 1363, 1381 (Fed. Cir. 2009); *Liebel-Flarsheim Co. v. Medrad, Inc.*, 358 F.3d 898, 906 (Fed. Cir. 2004); *GoLight, Inc. v. Wal-Mart Stores, Inc.*, 355 F.3d 1327, 1331 (Fed. Cir. 2004).

But the doctrine of disclaimer does not apply “where the alleged disavowel of claim scope is ambiguous.” *Omega*, 334 F.3d at 1324, *citing Northern Telecom Ltd. v. Samsung Electronics Co.*, 215, F.3d 1281 (Fed. Cir. 2000); *Pall Corp. v. PTI Techs. Inc.*, 259 F.3d 1383, 1391-94 (Fed. Cir. 2001); *Conoco, Inc. v. Energy & Envtl. Int’l, L.C.* 460 F.3d 1349, 1364 (Fed. Cir. 2006).

Here, there has been *no* “unmistakable disclaimer.” *Id.* at 1288. At most, Defendants can only identify ambiguous statements in specific embodiments relating to certain disadvantages of

certain types of “broiler chicken manure” containing unprocessed straw and litter. This is certainly not the situation where there is unmistakable disavowal of particular types of fertilizer or manure, or “no reasonable interpretation” other than disclaimer of particular types of manure. Thus, the disclaimer/disavowal doctrine is inapplicable.

In the alternative, even in the unlikely event the Court considers that *any* statements in the specification create a disclaimer or disavowal, the scope of such disclaimer certainly does not correspond to the broad, sweeping disclaimer proposed by Defendants.

VI. ANALYSIS OF DISPUTED TERMS:

A. The Manure Terms (Disputed Terms Nos. 1-5):

The Group A terms (see chart below) involve the manure component of the fertilizer. Each of the asserted claims in this case requires the presence of “decontaminated manure,” which the parties agree is manure that has been subjected to some type of decontamination process. First, this section will discuss Term No. 1 (“decontaminated manure”), and will then proceed to Term No. 2 (“raw manure”), then to Term No. 4 (the “plate count” term), and finally Term No. 3 (the “plate count reduction” term). Term No. 5, which incorporates Term No. 3, does not require a separate construction, and is included only because it has been identified by Defendants as a term that renders certain claims indefinite under 35 U.S.C. § 112 ¶ 2.

Term	Plaintiffs	Defendants
1. decontaminated manure ‘179: 20 ‘994: 1, 4, 23 ‘224: 12, 14	Manure that has been treated to reduce the viable plate count of aerobic and facultative bacteria in the manure to below ten million cfu/gram but is not sterilized. Manure is sterilized if it contains no living microorganisms that can be detected in terms of “total aerobic/facultative viable plate count.”	Manure that has been treated to reduce the density of live microbes by a factor of at least 2 logs (100 times), but has not been completely sterilized. <i>Further claim construction is required if the manure is derived from broiler chicken litter.</i>

Term	Plaintiffs	Defendants
		If the manure is derived from ruminant animals such as cattle and sheep, or from broiler chickens, the manure must be treated to be free from straw or other forms of litter or bedding.
2. raw manure '994: 1, 23	The manure that is treated to make the "decontaminated manure" in the fertilizer composition, before such manure undergoes treatment to reduce its "total aerobic/facultative viable plate count."	Raw manure is fresh manure that has not been decontaminated. Raw manure can have between 1-10 billion live microbes per gram.
3. Wherein the decontaminated manure has a total aerobic/facultative viable plate count reduced by 2-4 logs (100 to 10,000 times) compared to raw manure '994: 1, 23	The "decontaminated manure" in the fertilizer composition has a "total aerobic/facultative viable plate count" that is 2-4 logs less than the "total aerobic/facultative viable plate count" of the "raw manure" used to form the "decontaminated manure."	Many of the claims in the patents set a specific range on the amount microbes that must be destroyed in the manure. In those claims, the density of live microbes is required to be reduced to within the range of 2-4 logs (100 to 10,000 times) as compared to the density in raw manure. This range is what the inventor refers to in the patent as "substantially decontaminated manure".
4. total aerobic/facultative viable plate count '994: 1, 23	A measurement, expressed in cfu/gram, resulting from counting the total number of colony forming units of both aerobic bacteria and facultative bacteria that have grown on a medium of tryptic soy agar after about 3 days (72 hours) of incubation at 32° C.	Means the number of spores and facultative organisms that are alive
5. decontaminated manure and <i>Bacillus</i> spores wherein the decontaminated manure has a total aerobic/facultative viable plate count reduced by 2-4 logs (100 to 10,000 times) compared to raw manure '994: 1	No construction is required. In the alternative, this term means "decontaminated manure" and " <i>Bacillus</i> spores," present in a fertilizer composition, "wherein the "decontaminated manure" in the fertilizer composition has a "total aerobic/facultative viable plate count" that is 2-4 logs less than the "total aerobic/facultative viable plate count" of the "raw manure" used to form the "decontaminated manure."	See Term Nos. 1, 3 and 6 herein.

Term	Plaintiffs	Defendants
	(Defendants contend this term renders the claim indefinite. Plaintiffs contend this term is capable of being construed, and thus the claim is not indefinite)	

Term No. 1:

The definition of the term “decontaminated manure” (Term No. 1) is central and pivotal to this case. Every claim of the patent includes that term, and its definition will impact not only Plaintiffs’ infringement theory but also Defendants’ invalidity theories. Plaintiff’s proposed definition is based primarily on the specification, which references Term No. 1 over forty times.³ Further, Plaintiffs’ definition is consistent with the use of the term in the other claims.

Fundamentally, the parties do not dispute that “decontaminated manure” is manure that has been treated to reduce the level of certain ingredients naturally found in raw manure. But the parties dispute the *type of bacteria* that must be reduced for the manure to qualify as “decontaminated manure.” The parties also dispute the *amount of bacteria* in the manure that determines whether manure qualifies as “decontaminated manure.” Third, the parties dispute the *measurement test* for determining the amount of bacteria in the manure. Fourth, while the parties agree that “decontaminated manure” is not manure that has been “sterilized,” they dispute how to define “sterilized manure.”

Plaintiff’s definition of “decontaminated manure” (Term No. 1) is expressly defined in the specification, which includes the following express definitional statement:

³ The term “decontaminated manure” is mentioned in the Abstract and FIG. 1, and in the ‘179 specification at 1:60, 2:4-6, 2:15, 3:46, 3:57-58, 3:66-4:2, 4:28-31, 4:40, 5:44, 5:60, 6:33, 7:28, 7:63, 9:65, 10:2, 10:7, 10:40, 10:43, Table 4, 13:16, 13:44, 14:32, Table 5, 14:65, 15:27, 15:29, 16:29, 16:30, 16:35, 16:42, 16:56, 17:4, 17:8, 17:10 and 18:1.

For lack of definitive terminology this inventor will use the term “decontaminated manure” for manure that has a reduced viable plate count according to the specifications stated above.

(9:63-67.) Directly above that definitional statement is the following text, which completes the definition of “decontaminated manure”:

The present invention requires substantially dry manure, moisture content preferably less than 20 weight percent, preferably less than 15 weight percent. chicken or swine origin, *that has a microbial plate count below ten million or 1×10^7 cfu/gram (aerobic/facultative: total plate count on tryptic soy agar, 3 days, 32° C.)*, preferably below one million or 1×10^6 cfu/gram. This represents a 100 to 1,000 fold reduction, two-three logs, compared to the total count in fresh manure. When manure with a microbial content below one million cfu/gram is used according to the present invention, the resulting fertilizer formulations preferably have a Bacillus purity of 90 percent or greater.

(9:51-63, emphasis added.) It is well-settled that an inventor may be his own lexicographer, so that a claim term should be defined based on an express definition in the specification. *Phillips*, 415 F.3d at 1316 (“[O]ur cases recognize that the specification may reveal a special definition given to a claim term by the patentee that differs from the meaning it would otherwise possess.”). All 40+ instances of “decontaminated manure” in the specification are consistent with that definition.

Before considering the definitions for Terms Nos. 2-5, Plaintiffs will address the primary disputes between the parties’ concerning their respective definitions of “decontaminated manure” (Term No. 2). First, the *type of bacteria* used to evaluate whether manure is decontaminated is “aerobic and facultative bacteria,” not “live microbes” as urged by Defendants. The definition of “decontaminated manure” in the specification (as discussed above) clearly identifies aerobic and facultative bacteria as the type of bacteria that are used to evaluate whether manure is decontaminated or not.⁴ Furthermore, all of the claims that identify the extent of reduction in

⁴ Defendants’ own expert, Dr. Joseph Kloepper, agreed that the term “aerobic/facultative bacteria” means “aerobic and facultative bacteria.” Exh. 4, Kloepper Dep. Tr. at 211:212:7.

plate count use “aerobic/facultative bacteria” as the reference variable. Moreover, without exception, the only metric used in the specification for quantifying the level of decontamination of manure in a fertilizer composition is the measured level of the “aerobic/facultative bacteria” of the manure. The specification uses the phrase “aerobic/facultative bacteria” over fifteen times, and in each case is referring to the level of decontamination of the manure. Also, many of the claims include another limitation that more narrowly defines the decontaminated manure, by expressly reciting that “the decontaminated manure has a total aerobic/facultative viable plate count reduced by 2-4 logs (100 to 10,000 times) compared to raw manure.” (See Terms Nos. 3 and 5.) Therefore, the only types of bacteria that are properly used to characterize whether manure is “decontaminated” are the “aerobic and facultative bacteria” in that manure, not “live microbes,” as proposed by Defendants.

Second, Plaintiffs’ definition requires that the amount of bacteria (specified level or amount of aerobic and facultative bacteria that qualifies manure as “decontaminated manure”) is “below ten million cfu’s/gram” (10^7). This definition is rooted directly in the specification, discussed above, which defines “decontaminated manure” as having “a microbial plate count below ten million or 1×10^7 cfu/gram.” (See 9:54-55.) In contrast, Defendants’ definition incorrectly requires that the “density of live microbes” be reduced “by a factor of at least 2 logs (100 times). But the specification never refers to the “density of live microbes” at all much less requiring that the “density of live microbes” be reduced by 2 logs (100 times). Defendants’ definition is flawed because it not only specifies a particular reduction in the microbial level that is not found anywhere in the intrinsic evidence, but also fails to specify the final microbial level: that is, it fails to specify any particular microbial level of the manure after it has been subjected to the decontamination (treatment that causes microbial reduction).

Third, Plaintiffs' definition correctly specifies a particular measurement test for measuring the level of bacteria in decontaminated manure, which test will be referred to herein as the "plate-count test." The key parameters for that plate-count test are included parenthetically in the definition itself (as discussed above) in the specification ("aerobic/facultative: total plate count on tryptic soy agar, 3 days, 32° C.") Additional features of the plate count test are discussed elsewhere in the specification. Defendants' expert, Dr. Kloepper, even agreed that he was familiar with the methodology for carrying out the plate count test to measure bacteria levels, and that those three parameters are sufficient to identify the specific method. Exh. 5, Joint Claim Construction and Prehearing Statement, Exhibit C, Summary of Testimony. He also testified that, alternatively, a plate count test can be run that is the similar to the one specified in the patent, but uses a different growth medium, germination time, and temperature. See Exh. 4. Kloepper Dep. Tr. 211:4-220:14; 214:10-15; and 216:110-220:14. Notwithstanding Dr. Kloepper's view that the specific growth medium, time and temperature listed in the claim do not affect the result, Plaintiff submits that those parameters must be considered part of the definition of "decontaminated manure." In sum, Plaintiff's definition of Term No. 1 ("decontaminated manure") is correct, and Defendants' definition is wrong.

Defendants improperly define "total aerobic/facultative viable plate count" ("Disputed Term No. 4) as "the number of spores and facultative organisms that are alive." In so doing, Defendants bypass the actual claim language, and distort the meaning of Term No. 4. A plate count of a particular material that is being tested, e.g., a sample of decontaminated manure, is just a measurement, obtained after carrying out the steps of a particular test or protocol. The results (expressed in "colony forming units per gram of sample") are used to inferentially gauge the population of particular bacteria in that sample. But the number of colony-forming units that

are counted is not necessarily precisely the same as the actual “number of spores and facultative organisms that are alive” in that sample. Defendants’ definition incorrectly refers to the *inferential* quantity (number of spores and organisms) rather than the *directly-measured* quantity (colony-forming units).⁵

Finally, sterilized manure is not “decontaminated manure” in the context of the claims and specification. The parties are in essential agreement on this point, and it is supported by the patent specification, which unequivocally refers to “decontaminated manure” and “sterilized manure” as two different types of manure. Experiment #3 describes the evaluation of different solutions of layer chicken manure: “sterilized, decontaminated, and raw manure solutions were evaluated.” (12:48-49.) The results are reported in Table 4, which shows that the “Non-Bacillus count” for the solutions containing “1% sterile manure” was “None.” The specification explains: “This data provides evidence that Bacilli grow well in chicken manure if it is sterilized or decontaminated but do not grow well in raw manure due to its high concentration of microbial contaminants.” (12:63-67.) Thus it would contradict the intrinsic evidence to make “sterilized manure” a subset of decontaminated manure. Even Defendants’ expert recognized that, in the patent, sterilized manure falls under a different category than decontaminated manure. See Exh. 4, Kloepper Dep. Tr. 193:17-195:7 (“different product types”). However, Defendants err by using the phrase “*completely sterilized*.” Manure is either sterilized or not; there is no “completely” sterilized manure for the same reason there is no “partially” sterilized manure. According to U.S. Patent No. 5,853,450 (Burnham et al), the term “sterilized” means “the complete destruction of all microorganisms in a substance.” See Exh. 6, Burnham at 2:30-32;

⁵ As a practical matter, Defendants’ definition is also incorrect because it would permit Defendants to identify the number of spores and facultative organisms in a particular material (whether in an accused product or the prior art) sample using a different measurement protocol, rather than the test expressly recited in the patent claims. See Exh. 4, Kloepper Dep. Tr. 248:17-252:9.

and Exh. 4, Kloepper Dep. Tr. 191:1-14. Defendants' fertilizer expert agreed that according to the '179 patent manure is only sterilized if a plate count test establishes there are no detectable bacteria in the manure, but that it is very difficult if not impossible to confirm the 100% absence of microorganisms in sterilized manure. See Exh. 4, Kloepper Dep. Tr. 197:17 – 200:11. However, in the field of microbial measurements, a person of ordinary skill in the art would recognize that a material is sterilized if there are no *detectable* amounts of live microorganisms, since it is difficult if not physically impossible to either kill every single living things in manure or to evaluate whether every living thing is killed. Accordingly, Plaintiffs proposed the following as part of the definition of "decontaminated manure: "Manure is sterilized if it contains no living microorganisms that can be detected in terms of ""total aerobic/facultative viable plate count.""

Term No. 2:

Plaintiffs' definition of "raw manure" (Term No. 2) is consistent with the ordinary meaning of raw manure, the specification and related claim language. Defendants' definition, on the other hand, is neither logical nor helpful, and injects ambiguity rather than clarity.⁶

The common, ordinary meaning of "raw" supports Plaintiffs' definition. Defendants have quoted the following dictionary definition as part of their extrinsic evidence: "Raw – in its nature state; not yet processed or purified." See, Exh. 7, The Oxford American College Dictionary 2002. ESP 05296 – ESP 0530; See also PR 4-3 Joint Claim Construction and Prehearing Statement at Exhibit "B" (Document 88-2), page 8. That dictionary definition supports Plaintiffs' definition.

⁶ The definition of Term No. 2 is important because certain claims have plate-count reduction limitations (discussed below for Terms Nos. 3 and 5) involving a comparison between "decontaminated manure" and "raw manure," and also because the parties dispute whether those plate-count-reduction limitations are met by the Accused Products and the prior art.

Also, Plaintiffs' definition is supported by the specification, which repeatedly describes "raw" manure as the manure that is subjected to any one of a variety of treatment processes that reduce the level of aerobic and facultative bacteria. See, e.g., '179 patent at Col. 4, line 45 – Col. 5, line 4. Raw manure is sometimes referred to as "untreated" manure (See, e.g., col. 14, line 1, which refers to "raw slurry (untreated) and col. 22, lines 23-25, which refers to "untreated manure").

As disclosed in the specification, the inventor recognized that raw manure (including fresh manure) tends to have different levels of contamination, as measured by aerobic/facultative plate count (see, e.g., col. 1, lines 46-52; Table 4 at 13:1-15, which discloses raw manure as having Non-Bacillus Counts of $>10^9$ (greater than 1 billion) and $>10^8$ (greater than 100 million). The inventor also recognized that the degree/extent of manure decontamination is important, even beyond the 10 million cfu/gram threshold. Accordingly, the inventor defined at least one aspect of his invention in terms of difference (degree of plate-count reduction) between the aerobic/facultative viable plate count of the decontaminated manure in the fertilizer composition (final product) and that of the starting material (raw manure).

Plaintiff's definition also accommodates the purpose for reciting raw manure. The only reason raw manure is recited in the claims is to provide a reference point for the level/degree/extent of decontamination of the decontaminated manure in the fertilizer. The claims that recite a quantified reduction in plate count (Term No. 3) need a reference point for the reduction. The most logical reference point is the plate count of the starting material, which is raw manure. Plaintiff's definition makes it clear that the "raw manure" recited is not raw manure in general but rather the specific raw manure starting material for making the decontaminated manure in the claims.

Plaintiff's definition recognizes that "fresh manure" and "raw manure" do not necessarily mean the same thing. Fresh manure is the manure immediately after it has been excreted from the animal. Certainly, at that point in time, the fresh manure is raw, given that it is untreated. But after a period of time that manure is no longer "fresh." Dr. Kloepper agreed with that conclusion. See Exh. 4, Kloepper Dep. Tr. 275:23-276:7. Yet if that manure has never been subjected to any level of decontamination, i.e., treatment that causes reduction in plate count, that manure should logically still be considered "raw manure." Accordingly, Plaintiff disagrees with the statement in Defendant's definition that "[r]aw manure is fresh manure that has not been decontaminated." Fresh manure is always raw manure but raw manure is not always fresh.

Term No. 4:

Logically, the next term to be discussed is Term No. 4 ("total aerobic/facultative viable plate count"). As noted above, the definition of Term No. 1 ("decontaminated manure") requires a determination based on "total aerobic/facultative viable plate count," based on how the term "decontaminated manure" is defined in the specification. Many of the other claims expressly recite Term No. 4 ("total aerobic/facultative viable plate count") and that term is part of Terms Nos. 3 and 5 discussed below. Plaintiff's definition of Term No. 4 is: "A measurement, expressed in colony forming units, resulting from counting the total number of colony forming units of both aerobic bacteria and facultative bacteria that have grown on a medium of tryptic soy agar after about 3 days (72 hours) of incubation at 32° C." That definition is based on the specification, which specifically describes the protocol for measuring "total aerobic/facultative viable plate count" as a measurement that results from counting the total number of colony forming units of both aerobic bacteria and facultative bacteria that have grown on a medium of tryptic soy agar after about 3 days (72 hours) of incubation at 32° C. Defendants' claim

construction expert, Dr. Kloepper, agreed that any reference to a plate count in the patent means that a plate count test was performed; that the “count” itself was the result of counting the total number of colony forming units. See generally, Exh. 4, Kloepper Dep. Tr. 141:17-146:11. Dr. Kloepper agreed that the number of particular bacteria was an inference based on the plate count. 144:3-25; 216:11-23.

Defendants’ definition of Term No. 4 is flawed. Defendants define Term No. 4 as “the number of spores and facultative organisms that are alive.” But Defendants’ definition fails to refer to “colony forming units,” which is the basic unit for any plate count. Defendants’ definition fails to refer to any plate count test at all, notwithstanding that the claim itself expressly refers to plate count. Defendants’ expert admitted in deposition that there are a number of different ways to measure the spores and organisms in a material other than using a plate count test.⁷ Defendants completely sidestep the very thing that produces a plate count, which is a plate count test. Even in a generic sense, a “plate count” refers to the number of “colony forming units” that grow on a medium after a period of time and can be counted. Although that plate count number is considered by persons skilled in the art to be a way of gauging the number of original aerobic and facultative cells in the sample that are subjected to growth on the testing medium (because each cell is assumed to result in a “colony forming unit”), that conclusion is only inferential. Term No. 4 very specifically refers to a “viable plate count” rather than the number of particular types of cells. Also, Defendants’ definition refers to the spores and facultative organisms that are alive, but does not accommodate non-spore aerobic bacteria, which are also to be incubated and counted per the express claim language. According to Defendants’ summary of proposed expert witness testimony (Exhibit C to PR 4-3 Joint Claim Construction and Prehearing Statement (Document No. 66)), Defendants intend to argue that *any*

⁷ See Exh. 4, Kloepper Dep. Tr. 249:4-252:9.

plate count test may be used to evaluate the plate counts required by the claims, and that the three key parameters of a plate count test (growth medium, time and temperature) simply *do not matter*. That is incorrect. Finally, Defendants' definition fails to refer to aerobic bacteria at all, but rather refers only to spores and facultative organisms. Thus, Defendants' definition fails to include vegetative cells that are aerobic. Accordingly, Defendants' definition is flawed and should be rejected.

Plaintiffs' definition of Term No. 4 is supported by the law, and Defendants' are not. The Federal Circuit has frequently approved of defining a claim term by a specific standard disclosed in the specification. Recently, for example, in *Vizio, Inc. v. International Trade Comm'n*, 605 F.3d 1330, 1337 (Fed. Cir. 2010) the court held that that term "MPEG compatible program map information" in the claim necessarily referred to the MPEG-2 standard, on grounds that "the MPEG-2 standard was specifically referenced in numerous places in the specification, and the specification makes no reference to any other MPEG standard." In the same way, the only procedure disclosed in the specification for measuring the decontamination level of manure is plate count, using units of "cfu/gram" and the only bacteria disclosed as being measured by a plate count protocol are aerobic and facultative.

Similarly, in *Chimie v. PPG Industries, Inc.*, 402 F.3d 1371, 1378 (Fed. Cir. 2005), the Federal Circuit approved the district court's construction of the claim term "dust-free and non-dusting," proposed by the defendant, which incorporated a certain specific measurement protocol used by the industry to measure certain properties of carbon black (the "DIN test"). *See id.* at 1374-75. That dust measurement test had been expressly disclosed in the patent specification. The district court had held:

Dust-free and non-dusting” means “a level of dust formation associated with the silica particulates of the ‘234 patent, as measured in percentage weight according to DIN 53 583, that has fines content value less than or equal to 13 and weight loss by abrasion value less than or equal to 0.5.

The Federal Circuit agreed with this claim construction, holding that reference to the particular measurement protocol (the DIN test) reconciled ambiguous claim language with the inventor’s disclosure. The court rejected the plaintiff’s argument that the DIN test was “not the only means by which to assess the amount of dust produced by the invention in comparison to the prior art.” *Id.* at 1379. For example, the so-called “pour test” or the “stabilized fluid bed test” were also available and disclosed in the patent specification. The court rejected that argument on the grounds that only the DIN test was used to measure the “dust-free and non-dusting” property. *Id.* at 1380. Similarly, here, Dr. Kloepper agreed that the plate count test is one widely used way to measure bacteria levels and indicated that a person of ordinary skill in the art would understand how to carry out that test. See, e.g., Exhibit 5, Summary of the Proposed Testimony of Defendants’ Expert Witness, Dr. Joseph Kloepper, at page 4 (subsection entitled “Testing to Determine Plate Count.”) Although Dr. Kloepper has testified that there are a number of other procedures for counting cells, and even a number of different plate count procedures, none of those other procedures are disclosed in that patent.

Term No. 3:

Term No. 3 is a “product-by-process” limitation. It recites decontaminated manure that it subjected to a plate count reduction process (decontamination), and it characterizes that decontaminated manure quantitatively, in terms of the degree (or amount/extent) of the reduction, by comparing it to the raw manure, i.e., the manure before that decontamination process. Plaintiffs’ definition of Term No. 3 tracks the actual claim language, is logical and consistent with the rest of the claim, and provides additional clarity to the term itself. It is also

consistent with the specification. As discussed above, in certain claims, not only is the plate count of the decontaminated manure in the final product (less than 10 million) important, but also the degree/extent of reduction in plate count. It is that reduction that Term No. 3 addresses. Defendants have failed to offer a specific definition for Term No. 3, except to point out that “[t]his range is what the inventor refers to in the patent as ‘substantially decontaminated manure.’” (An assertion with which Plaintiff agrees.)

As discussed above for Term No. 1, the bacteria that are measured to quantify decontaminated manure (in absolute terms and for identifying the degree of decontamination) are aerobic and facultative bacteria. The protocol for making that measurement is a specific plate count test that is described in the patent, and the result of that test is a number that is referred to as “aerobic/facultative viable plate count.” In the product-by-process language of Term No. 3, the process language is the phrase “reduced by,” a phrase that corresponds to decontamination and specifically to the quantifiable type of decontamination considered important by the inventor, i.e., decontamination that reduces the aerobic/facultative viable plate count of manure. Term No. 3 specifies the degree (amount/extent) of the reduction as 2-4 logs, covering any degree of reduction falling within that range. Term No. 3 also specifies that the 2-4 log reduction is determined “compared to raw manure.” Accordingly, to determine whether decontaminated manure in a fertilizer composition (whether an Accused Product or prior art) literally meets Term No. 3, the “aerobic/facultative viable plate count” of the raw manure used to make that particular decontaminated manure (starting material) is determined, the “aerobic/facultative viable plate count” of the decontaminated manure is also determined; and those two plate counts are compared. The difference between those two plate counts is,

inferentially, the degree (amount/extent) of the reduction. If that reduction falls within the range of 2-4 logs, then Term No. 3 is satisfied.

Term No. 5:

As noted above, Plaintiffs submit that Term No. 5 does not require any further construction, given that all the sub-parts of Term No. 5 are defined above (Terms 1, 3 and 6). Plaintiffs are proposing this definition only to refute Defendants' argument that any particular claim is indefinite by reason of Term No. 5. As noted above, Plaintiffs define Term No. 5 by incorporating by reference their definitions of Term No. 1 ("decontaminated manure"), Term No. 2 (raw manure), Term No. 3 ("wherein the decontaminated manure has a total aerobic/facultative viable plate count reduced by 2-4 logs (100 to 10,000 times) compared to raw manure") and Term No. 6 ("Bacillus spores," discussed below).

B. The *Bacillus* Spores Terms (Nos. 6 and 7)

Group B terms (Terms Nos. 6 and 7) involve the "bacillus spores" component of the fertilizer. Term No. 6 refers to "bacillus spores" while Term No. 7 refers to the concentration of bacillus spores in a dry fertilizer.

Term	Plaintiffs	Defendants
6. <i>Bacillus</i> spores '179: 20 '994: 1, 4, 5, 7, 23, 27 '224: 12, 14	The <i>Bacillus</i> bacteria present in the fertilizer composition are predominantly in spore form and not vegetative form.	The term "spore" is a common shortened form of the term "endospore", which is a dormant, tough, and temporarily non-reproductive structure produced by certain bacteria, including most of the <i>Bacillus</i> genus. The spore structure becomes important when the bacterium is experiencing a harsh environment, including when the bacterium is getting dried out. Spores enable bacterium to survive through periods of environmental stress. When the environment returns to favorable conditions, the spore can germinate back into a live

Term	Plaintiffs	Defendants
		reproductive state.
<p>7. present in sufficient concentration to effect a viable spore count of between 10⁶ cfu to 10⁹ cfu per gram of dry composition</p> <p>‘994: 14, 23</p>	<p>The “<i>Bacillus</i> spores” in a dry fertilizer composition are present in an amount such that a measurement according to the spore count procedure in the patent results in a viable spore count between 10⁶ and 10⁹ colony forming units (cfu) per gram of the dry fertilizer composition. The spore count procedure in the patent includes adding distilled water to a sample of the dry fertilizer composition, heating the sample for 10 minutes at 80° C to kill non-spore forming bacteria and then incubating the sample aerobically for 48 hours to recover only <i>Bacillus</i> spores. <i>Bacillus</i> spore counts are a measurement resulting from counting the total number of colony forming units of the <i>Bacillus</i> bacteria that have grown on a medium of tryptic soy agar after about 3 days (72 hours) of incubation at 32° C. The resulting spore count (in cfu’s) is then divided by the weight (in grams) of the original fertilizer sample.</p> <p>The term “dry fertilizer composition” means a fertilizer composition formed of solid fertilizer which may also include water moisture of no more than about 20 wt% water.</p>	<p>This limitation applies to the concentration of the <i>Bacillus</i> spores when the fertilizer is a dry composition. The fertilizer must include enough spores that are capable of germinating back into <i>Bacillus</i> bacteria to create between 10⁶ to 10⁹ colony forming units per gram of fertilizer. A colony forming unit is a live reproducing bacteria.</p>

Plaintiffs have no quarrel with Defendants’ technical definition of “spore” (singular) as part of the definition of Term No. 6. However, none of the claims refers to just a single “spore” but always to “*Bacillus* spores” (plural). Accordingly, although Plaintiffs would not oppose including any part of Defendants’ definition of Term No. 6 in the claim construction order, Plaintiffs would request that the Court also include Plaintiffs’ definition.

Plaintiff's definition of Term No. 6 requires that the *Bacillus* bacteria in the fertilizer composition be *predominantly in spore form and not vegetative form*. Plaintiffs' definition is based on the context of the term in the claim, how the term is used in the specification, and the inherent nature and properties of *bacillus* bacteria.

The Federal Circuit has held that context is important to a proper claim construction. The court has said that it "does not interpret claim terms in a vacuum, devoid of the context of the claim as a whole." *Kyocera Wireless Corp. v. International Trade Com'n*, 545 F.3d 1340, 1347 (Fed. Cir. 2008). The context of a disputed claim term may provide a different interpretation than how that term might otherwise be defined in isolation. In *Kyocera*, for example, the Federal Circuit reversed the ITC's interpretation of the term "different," recited in a claim directed to a wireless telecommunications system. The court noted that, as used in the claim, the phrase "does not, in and of itself, suggest any limitation on the degree of difference between the two wireless communications ... [and] ... merely requires that the communications be 'different,' without suggesting any manner or degree of difference." *Id.* at 1346. But, the Court continued, the context of the claim required a more narrow definition of the claim term. Accordingly, the Court affirmed that "the specification and context in this case show that the 'different' wireless communications means a difference in the method of communication, not simply any conceivable difference." *Id.* at 1349. As such, the claims were not anticipated by prior art with other differences. *Id.*

Similarly, here, the context of the term "bacillus spores" within the claims compels the conclusion that "bacillus spores" means more than simply two or more bacillus spore cells. In every claim, the "bacillus spores" are recited as being part of a fertilizer composition that also includes decontaminated manure. But in reality, any "bacillus spores" included in fertilizer is

part of bacillus bacteria that also includes bacillus bacteria in non-spore form, primarily vegetative cells. Bacillus bacteria always include a mixture of three types of cells: (1) spores, (2) vegetative cells and (3) dead cells. In the context of the claims herein, the proper definition of the term “bacillus spores,” is that all the bacillus *bacteria* in the fertilizer composition are predominantly in spore form, not vegetative form. Thus, any bacillus bacteria that is predominantly in vegetative form would not be considered Bacillus spores notwithstanding that it might contain trace amounts of bacteria in spore form.

On the other hand, if a broad definition of the term “bacillus spores” is adopted, to mean two or more bacillus spore cells, then all Bacillus bacteria would be covered, since all bacillus bacteria inherently include at least two individual bacillus spore cells. Using such a broad definition, the term “bacillus spores” in each of the patent claims would even encompass bacillus bacteria composed of 99% vegetative cells and only 1% bacillus spore cells. That would be an incorrect interpretation of the patent disclosure, and accordingly an incorrect interpretation of the claims. Accordingly, for the term “bacillus spores” to have significance, in context, Plaintiffs request that it be defined as Bacillus bacteria that are predominantly in spore form, e.g., 50% or more in spore form.

Plaintiffs’ definition is supported by the specification. Each time the bacillus spores are mentioned in the patent specification more than two spore cells are inherently present. Any bacillus spores disclosed in the specification are therefore not alone or isolated, but rather part of a larger quantity of Bacillus bacteria. Whenever Bacillus bacteria are referred to as “spores” in the claims or specification, the necessary implication is not that the bacteria includes two or more spores (plural) but rather that the entire bacteria is predominantly in spore form, i.e., that more than 50% of the cells in those bacteria sample are in spore form.

Next, Plaintiff's definition of Term No. 7 refers to the concentration of the *Bacillus* spores. The definition is based on the claim language itself as well as the specification.

Plaintiffs' definition of Term No. 7 is:

The "*Bacillus* spores" in a dry fertilizer composition are present in an amount such that a measurement according to the spore count procedure in the patent results in a viable spore count between 10^6 and 10^9 colony forming units (cfu) per gram of the dry fertilizer composition. The spore count procedure in the patent includes adding water to a sample of the dry fertilizer composition, heating the sample for 10 minutes at 80°C to kill non-spore forming bacteria and then incubating the sample aerobically for 48 hours to recover only *Bacillus*. *Bacillus* spore counts are a measurement resulting from counting the total number of colony forming units of the *Bacillus* bacteria that have grown on a medium of tryptic soy agar after about 3 days (72 hours) of incubation at 32°C . The resulting spore count (in cfu's) is then divided by the weight (in grams) of the original fertilizer sample. A "dry fertilizer composition" includes solid fertilizer but may also include up to 20 wt% water content."

The concentration Term No. 7 refers to the concentration of the "*Bacillus* spores" present in the fertilizer composition. It is expressed in terms of a "viable spore count" range (between 10^6 and 10^9 colony forming units) per gram of dry concentration. The specification specifies a test protocol that explains precisely how to measure any given fertilizer composition to determine whether the concentration of *Bacillus* spores falls within the recited range. Under the sub-heading "*Bacillus* Viable Spores/Gram—Procedure" (15:3) the specification states the following:

The dry samples containing *Bacillus* spores are mixed in sterile distilling water, 1 part dry sample +9 parts water. This mixture is heated at 80°C for 10 minutes and cooled rapidly, this procedure kills microbial vegetative cells but not *Bacillus* spores. The heated sample is surface streaked, at various dilutions, onto tryptic soy agar plates. Agar plates are then incubated, upright, at 32°C for 72 hours. Counts are made in triplicate, averages reported.

(15:4-12) That procedure corresponds to Plaintiffs' definition of Term No. 7.

Finally, in defining Term No. 7, the term "dry composition" needs to be construed as a fertilizer composition formed of solid fertilizer which may also include water moisture of no

more than about 20 wt% water. Otherwise, a jury might conclude that a dry composition must be “bone dry” and that any fertilizer with some water content does not qualify as a “dry fertilizer composition.” The specification does not offer an express definition of “dry” fertilizer composition, but makes it clear that such a composition may include water in the form of moisture content. The highest moisture percentage is identified as less than 20 wt%, which is said to be preferred (4: 52) but moisture levels of below 15 % (16:43, 19:30 and 22:23) and 12-16% (18:28) are also mentioned. Accordingly, Plaintiffs submit that defining a dry fertilizer composition in terms of a “below 20 wt%” is reasonably supported by the specification.

C. Additional Ingredients (Disputed Terms Nos. 12, 13, 19):

The Group C terms all involve additional ingredients that are added to manure to make the fertilizer. The term “additive” is a general term that encompasses any added ingredient, but specifically refers to N compounds, P compounds and K compounds in claims 3 and 4 of the ‘994 patent. The term “humic acid” refers to a specific ingredient. The term “complete fertilizer” refers to a type of fertilizer that both parties agree includes certain “N-P-K compounds” as ingredients, in addition to the decontaminated manure and bacillus spores. But Plaintiffs maintain that a “complete fertilizer” does not require the presence of humic acid.

Term	Plaintiffs	Defendants
12. humic acid ‘179: 20 ‘994: 2, 4, 23	A mixture of polymers containing aromatic and heterocyclic structures, carboxyl groups, and nitrogen. Humic acid typically contains the brownish-black pigment melanin, and can be obtained from lignite. It is soluble in bases, but insoluble in mineral acids and alcohols. The term “humic acid” also includes humates, which are humic acid salts. The term “humic acid” does not include humus.	Humic acid is an acid that is naturally produced during the decomposition of organic matter. It is commonly used to promote plant growth. The patent describes humic acid as “a polymeric compound”... “not well defined but a mixture of polymers containing aromatic and heterocyclic structures, carboxyl groups, and nitrogen.” “It is soluble in bases, but insoluble in mineral acids and alcohols.” That is not a

Term	Plaintiffs	Defendants
		useful definition for claim construction, as it does not simplify any of the terms in a way that is useful to a jury.
13. Additive '994: 3, 4	Something that has been added to the manure to form the fertilizer.	No construction is needed.
19. complete fertilizer '179: 21 '994: 24	A fertilizer composition that has at least decontaminated manure, <i>Bacillus</i> spores and N-P-K compounds.	A fertilizer composition that has at least decontaminated manure, <i>Bacillus</i> spores, humic acid, and N-P-K compounds.

Plaintiffs submit that defining an “additive” (Term No. 13) as “something that is added” is true to the plain and ordinary meaning of the word, and is also supported by the specification and the context of the claims. The specification acknowledges that, in its natural form, raw chicken manure contains nitrogen, phosphorous compounds and potassium compounds. (9:33-36) But those compounds that are inherently a part of the manure do not qualify as one of the “additives” recited in claim 3 of the ‘994 patent. Permitting any of those compounds to be something present in the manure would contradict the claim language itself, which makes the additives different from the “decontaminated manure.” Plaintiffs submit that definition is necessary to avoid any allegation that any N compound, P compound or K compound can be satisfied (in the prior art or an accused product) by any such compound that is already present in raw manure before treatment.

Term No. 12 (“humic acid”) is a specific additive. Plaintiffs’ definition of Term No. 12 is taken directly from the specification, and also Hawley’s Condensed Chemical Dictionary, from which the specification quotes practically word-for-word. (attached in Exh. 7, Dictionary

Definitions). As an initial matter, to provide context for the Court, construing this term is important to Plaintiffs' infringement case (and possibly also Defendants' invalidity case) because Defendants' advertising (and its product packaging) lists "humate" as an ingredient. Thus, a critical part of the definition of Term No. 12 is the last sentences i.e., that "humic acid" includes humates but does not include humus. *See* Exh. 4, Kloepper Dep. Tr. 149:10-151:8.

Defendants have argued that Plaintiffs' definition will not be useful for claim construction on the basis that "it does not simplify any of the terms in a way that is useful to a jury." While desirable, simplicity is not the proper standard for construing terms, particularly if oversimplification results in an inaccurate definition. That is the case with Term No. 12. As set forth in Plaintiffs' definition, humic acid is an ingredient that is formed in nature, is a complex mixture of different types of polymers and can be derived from lignite.

Defendants' definition is inaccurate, and has a number of material flaws. Defendants' definition is overly broad in one respect. Defining humic acid as something that is "produced during the decomposition of organic matter" is not supported by the specification, and is overly broad because it encompasses humus, which is not humic acid. Defendant's fertilizer expert Dr. Kloepper testified in his deposition that "humus" is something that is produced during the decomposition of organic matter. *See* Exh. 4, Kloepper Dep. Tr. 149:8-10. Dr. Kloepper testified that the two are related in that humic acid is produced from humus. *Id.* But the opposite is not true. *Id.* at 150:17-151:4. More significantly, humic acid and humus are actually two different materials. *Id.* at 149:21-150:9. Defendants have alleged the invalidity position that in prior art manure-based fertilizers, the presence of humus in the manure is tantamount to the presence of humic acid. Plaintiffs oppose that argument. Similarly, Plaintiffs would oppose any definition of "humic acid" that makes disclosure of humus to be disclosure of humic acid.

Defendants' definition also includes the statement, "It is commonly used to promote plant growth." That statement is not necessary to the definition. Nor is there support for that statement in the intrinsic record; and Plaintiffs submit it could be improperly used to support Defendants' allegation that certain prior art manures inherently include "humic acid," or that the inclusion of humic acid as part of a fertilizer would be obvious.

In another respect, Defendant's definition of "humic acid" is overly narrow. For example, it is inaccurate (paradoxically) to define humic acid as an "acid." In the conventional sense of the word an "acid" is material that must have at least a pH below 7.0. Also, defining "humic acid" as an "acid" could exclude humates, which are technically "salts" not "acids" and certainly not guaranteed to have a pH below 7.0. But excluding humates from the definition would directly contradict the specification, which expressly identifies "humic acid in the form of potassium humate" as a member of the "humic acid" family (15:62). Also, excluding humates from the definition would also contradict Claim 19, which recites that "the humic acid is potassium humate."

Finally, Plaintiffs have proposed a definition of "complete fertilizer" (Term No. 19) that is now virtually identical to Defendants' definition, except that Plaintiffs' definition does not require "humic acid," given that "humic acid" is not one of the required ingredients contained in a "complete fertilizer" as disclosed in the specification. The specification has a section entitled "N-P-K Ingredients," and that section begins with the following paragraph:

These are optional. Addition of conventional N-P-K ingredients to formulations of the present invention *allows for the production of complete fertilizer products*. Such a product can be used as a sole source of fertilizer in many applications, or, as an augmenting fertilizer used together with conventional chemical fertilizers.

Col. 17, lines 37-42 (emphasis added). That section then goes on to discuss each of the optional N-P-K compounds that make up a "complete fertilizer." Humic acid is mentioned, but never as

an ingredient that is required for a fertilizer to be a “complete” fertilizer. In fact, the section immediately preceding the “N-P-K Compounds” section is entitled “Humic Acid Ingredient,” and there is no mention of either “complete fertilizer” or “N-P-K compounds” in that section. The stated purpose or function of humic acid is “to promote the hardness of prills/pellets ...” (17:18-19). If the fertilizer is liquid, then there is no need for humic acid because one does not wish to “harden” a liquid. Therefore, because it is possible for a liquid fertilizer to be a “complete fertilizer” that does not include humic acid, the general definition of “complete fertilizer” (encompassing both solids and liquids) should not include humic acid.

D. The Probiotic Terms (Disputed Terms Nos. 14-18):

The five Group D terms (Terms Nos. 14-18) all relate to the “probiotic” bacteria recited in claim 20 of the ‘179 patent and claims 7 and 27 of the ‘994 patent. Plaintiffs contend that none of these terms require any construction. Plaintiffs have proposed definitions only to refute Defendants’ allegation that any of those terms are indefinite or that any claims are indefinite on grounds that they include those terms, and also to avoid adoption of any of the overly restrictive definitions proposed by Defendants.

Term	Plaintiffs	Defendants
14. probiotic <i>Bacillus</i> bacteria ‘179: 20 ‘994: 7, 27	No construction is required. In the alternative, this term means <i>Bacillus</i> bacteria that are capable of benefitting a plant when introduced to the soil close to the plant. (Defendants contend this term renders the claims indefinite. Plaintiffs contend this term is capable of being construed, and thus the claims are not indefinite)	<i>Bacillus</i> bacteria that increase yield or reduce nitrogen requirements of agricultural plants.
15. probiotic <i>Bacillus</i> bacteria capable of enhancing beneficial microbial	No construction is required. In the alternative, this term means	See Term Nos. 14 and 16 herein.

Term	Plaintiffs	Defendants
<p>populations within a rhizosphere of a plant</p> <p>'994: Claim 7</p>	<p>"probiotic <i>Bacillus</i> bacteria" (defined) that are capable of promoting the growth and reproduction of microorganisms within the "rhizosphere" of a plant, such that the microorganisms benefit the plant.</p> <p>(Defendants contend this term renders the claim indefinite. Plaintiffs contend this term is capable of being construed, and thus the claim is not indefinite)</p>	
<p>16. Capable of enhancing beneficial microbial populations</p> <p>'179: 20 '994: 7, 27</p>	<p>No construction is required.</p> <p>In the alternative, this term means capable of promoting the growth and reproduction of microorganisms that benefit a plant.</p> <p>(Defendants contend this term renders the claims indefinite. Plaintiffs contend this term is capable of being construed, and thus the claims are not indefinite)</p>	<p><i>Bacillus</i> bacteria that promote the growth and reproduction of other beneficial microbes in the root zone of a plant.</p>
<p>17. probiotic <i>Bacillus</i> bacteria capable of enhancing beneficial microbial populations within a rhizospherer of a plant</p> <p>'994: 27</p>	<p>This term means "probiotic <i>Bacillus</i> bacteria" (defined) that are capable of promoting the growth and reproduction of microorganisms within the "rhizosphere" of a plant, such that the microbial organisms benefit the plant.</p> <p>Defendants have agreed that the word "rhizospherer" is an obvious misspelling, and means "rhizosphere."</p> <p>(Defendants contend this term renders the claim indefinite. Plaintiffs contend this term is capable of being construed, and thus the claim is not indefinite)</p>	<p>See Term Nos. 14 and 16 herein.</p>
<p>18. beneficial microbial populations within a rhizosphere of a plant</p> <p>'179: 20</p>	<p>No construction is required.</p> <p>In the alternative, this term means microorganisms within the rhizosphere of a plant that benefit the plant.</p>	<p>See Term No. 16 herein.</p>

Term	Plaintiffs	Defendants
	(Defendants contend this term renders the claim indefinite. Plaintiffs contend this term is capable of being construed, and thus the claim is not indefinite)	

Plaintiffs' definition of Term No. 14 is supported by the context of the term as it is used in the claims and the specification. In contrast, Defendants' definition is overly restrictive, and imports extraneous limitations from the specification and other claims.

Term No. 14 appears in only three of the asserted claims, i.e., claim 20 of the '179 patent and claims 7 and 27 of the '994 patent. In the context of those claims, "probiotic" *Bacillus* bacteria are those bacteria that are capable of providing some benefit to the plant. Such benefit is provided when the bacteria are introduced to the rhizosphere of the plant. Each of those three claims expressly recites the specific benefit of the "probiotic *Bacillus* bacteria" to the plant as being "capable of enhancing beneficial microbial populations within a rhizosphere of a plant." (See Term Nos. 15 and 17). Thus, the general property of the bacteria (providing a benefit to the plant) is consistent with the specific property that is recited in the claim (enhancing beneficial microbial populations).

Plaintiffs' definition of Term No. 14 is consistent with the specification. The following statement is the first occurrence of the term "probiotic" in the specification:

Using [fresh] manure for food plant production can pose health hazards and when added to soil along with *beneficial microorganisms such as probiotic Bacillus bacteria*, the microorganisms contributed by the manure out grow *the beneficial probiotic microorganisms*.

(1:52-57 emphasis added). In that statement "the beneficial probiotic microorganisms" is a reference to the probiotic *Bacillus* bacteria introduced earlier in the sentence. Significantly, the

statement appears in the “background” portion of the patent, and is not referring to the invention, but rather to any microorganisms that are added to soil to benefit the plant. That statement does not mention increasing plant yield or reducing nitrogen requirements at all.

Only when the specification discusses probiotic *Bacillus* bacteria in the context of the invention is the increasing of plant yield or the nitrogen reduction features of the bacteria mentioned:

More specifically, the invention concerns compositions comprising at least one species of probiotic *Bacillus* bacteria that exert a positive effect on the yield of agricultural plants and/or reduce the nitrogen requirements of agricultural plants

...

(3:38-42) Notably, that statement refers to “one species of probiotic *Bacillus* bacteria that exert a positive effect ...”. By using the restrictive “that” instead of the non-restrictive “which” the statement indicates that the property that Defendants seek to convert into a universal property of all probiotic *Bacillus* bacteria is actually only a property possessed by “one species” of the bacteria. It would be improper to impose that property or characteristic as a universal one.

Then, the specification states that “preferred compositions of the invention are those wherein the *Bacillus* spores are from strains of probiotic *Bacillus* bacteria capable of enhancing microbial populations within the rhizosphere.” (3:64-66) That statement is consistent with Plaintiff’s broad definition of probiotic *Bacillus* bacteria. But that statement does not suggest that all probiotic *Bacillus* bacteria necessarily increase plant yield or reduce nitrogen requirements. In fact, that statement suggests just the opposite, that enhancing microbial populations is just one specific benefit.

Next, the specification provides a more complete discussion of the probiotic *Bacillus* bacteria:

A further aspect of the present invention is the discovery that *certain probiotic Bacillus species* cause an increase in numbers of unrelated, yet beneficial, microbial species within the rhizosphere and, concomitantly, cause significant yield increases and/or nitrogen sparing effects.

(6:9-13, emphasis added) That statement is consistent with Plaintiffs' definition, which is that probiotic *Bacillus* bacteria provide a benefit to that plant when introduced to the rhizosphere of the plant. The three benefits identified in that statement are: (1) causing increase in numbers of unrelated, yet beneficial, microbial species within the rhizosphere; (2) causing significant yield increases; and (3) causing nitrogen sparing (reduction) effects. According to the express language in that statement, only "certain" probiotic *Bacillus* bacteria provide those three specific benefits. Therefore, because "all" probiotic *Bacillus* bacteria do not provide those specific benefits, any universal definition that incorporates any of those particular benefits would be incorrect.

Defendants' definition is therefore incorrect for a number of reasons. First, it incorporates extraneous limitations from the specification. Increasing plant yield or reducing nitrogen requirements are not properties possessed by all probiotic *Bacillus* bacteria, as indicated by the clear statement in the specification, noted above. Second, Defendants' definition incorporates extraneous limitations from other claims. Claims 12 and 14 of the '224 patent expressly recite increasing yield and reducing nitrogen usage. It would be improper to incorporate those limitations into the definition of "probiotic *Bacillus* bacteria," a term that appears in different claims of a different patent.

Next, Plaintiffs will discuss Term No. 16, which is part of Terms Nos. 15 and 17. Term No. 16 ("capable of enhancing microbial populations") is defined by Plaintiffs as "capable of promoting the growth and reproduction of microbial organisms that benefit a plant." Plaintiffs' definition is identical to Defendants' definition, insofar as it recognizes that "enhancing

beneficial microbial populations” means to “promote the growth and reproduction of other beneficial microbes ...”. That is, the word “enhance” means to promote growth and reproduction, and the term “beneficial microbial populations” refers to other microbes (“other beneficial microorganisms”) next to the plant. That is, the other microbes (microorganisms) that grow and reproduce, and that benefit the plant, are different from the probiotic *Bacillus* bacteria that are added via the fertilizer. However, there are significant differences between Plaintiffs’ and Defendants’ definitions.

The first difference is that Plaintiffs’ definition includes the word “*capable of*,” which is expressly part of the term, unlike Defendants’ definition, which avoids using that word. The difference is significant. In *Ball Aerosol v. Limited Brands*, 555 F.3d 984, 994-95 (Fed. Cir. 2009), the Federal Circuit reversed a finding of infringement that had concluded that accused products were “reasonably capable of being configured” as described in the claims, when the claims did not use that language. Here, unlike *Ball Aerosol*, the claims (Term Nos. 15 and 17) expressly include the term “capable of,” and accordingly that term should be part of the definition. In fact, Defendants quoted from a dictionary definition of “capable” as part of their extrinsic evidence in the Joint Claim Construction and Prehearing Statement, and that definition supports Plaintiffs’ definition perfectly.⁸ The phrase “enhancing beneficial microbial populations” that follows “capable of” in Term No. 16 is considered a functional term as a matter of well-established case law. See, e.g., *Phillips*, 415 F.3d at 1312. And the word “capable of” indicates that the fertilizer has the capacity or ability to perform the recited function, but need not be actually carrying out that function. Thus, the term means that the fertilizer composition has

⁸ “Capable – having the ability, fitness, or quality necessary to do or achieve a specific thing.” The Oxford American College Dictionary 2002. Defendants’ extrinsic evidence in PR 4-3 Joint Claim Construction and Prehearing Statement, at 31, provided in Exhibit 7.

the capacity or ability to promote the growth and reproduction of other beneficial microbes in the root zone of a plant.

If Defendants' definition were adopted, any evidence offered would have to prove that any fertilizer in question (whether accused product or prior art) is actually in the process of promoting the growth and reproduction of beneficial microbes relative to the plant. Only a fertilizer that is actually in the ground buried next to the plant could meet that requirement, which Plaintiffs submit would be an unreasonable interpretation of the claim.

Secondly, unlike Defendants' definition, Plaintiffs' definition of Term No. 16 does not specify the *location* where the other microbes grow or reproduce. The location does not form any part of Term No. 16, but rather is part of Terms Nos. 15, 17 and 18 ("rhizosphere"). In any event, Defendants incorrectly define Term No. 16 in terms of the "root zone of a plant," notwithstanding that the claim expressly recites the "rhizosphere" of the plant as the location. To the extent the Court wishes to make the definition of Term No. 16 refer to the location of where the beneficial microbial populations are increased, that location should be the "rhizosphere," not the "root zone of a plant."

As explained by Dr. Kloepper, the "root zone of the plant" is different from the "rhizosphere." The former occupies a much broader area around a plant, whereas the rhizosphere is a sub-part of the root zone, several millimeters from the actual root surfaces, and is what he refers to as the "zone of influence." Exh. 4, Kloepper Dep. Tr. 28:19-29:9; 97:20-98:23. Because a "root zone of a plant" is different from a "rhizosphere of a plant," Plaintiff submits that the definition should incorporate the latter not the former.

Term No. 18 ("beneficial microbial populations within a rhizosphere of a plant") is defined by Plaintiffs as "microbial organisms within the rhizosphere of a plant that benefit the

plant.” Unlike Term No. 16, this term specifies the *location* where the other microbes grow or reproduce (the “rhizosphere”). But as discussed above, for Term No. 16, the only location supported by the claim language and the specification is the “rhizosphere.” In contrast, Defendants’ proposal to define the rhizosphere as the “root zone of a plant” is inaccurate, as demonstrated by Dr. Kloepper’s testimony. Term No. 18 also includes the word “beneficial.” To the extent Term No. 18 is construed at all, the term “beneficial” should describe the microbial organisms “that benefit the plant.” In the context of the claim, and the specification, no other beneficial feature of those microbial organisms is contemplated.

Terms Nos. 15 and 17 can then be defined based on the definitions of Terms Nos. 14, 16 and 18. Plaintiffs define both Term No. 15 (“probiotic *Bacillus* bacteria capable of enhancing beneficial microbial populations within a rhizosphere of a plant”) and Term No. 17 (“probiotic *Bacillus* bacteria capable of enhancing beneficial microbial populations within a rhizospherer of a plant”) as “‘probiotic *Bacillus* bacteria’ that are capable of promoting the growth and reproduction of microbial organisms within the rhizosphere of a plant, such that the microbial organisms benefit the plant.” The rationale behind those definitions is fully set forth above, with respect to Terms Nos. 14, 16 and 18, which is incorporated by reference herein.

Plaintiffs submit that Term No. 17 requires construction, but only because it includes a minor typographical error (“rhizospherer”), which should be defined by the Court as “rhizosphere.” See, e.g., *Essex Rubber Co.*, 272 U.S. at 429, *Ultimax*, 587 F.2d at 1353 (discussed elsewhere herein) Other than the misspelled word “rhizospherer,” Term No. 17 is identical to Term No. 15, and has the same definition, discussed above.

E. The Yield Terms (Disputed Terms Nos. 20-24):

The five Group E terms all involve some aspect of the “yield” of a plant (Term No. 20), as recited in Claim 12 of the ‘224 patent, which refers to the “nitrogen effect” (Term No. 21), specifically the reduction of the nitrogen effect (Terms Nos. 22 and 23). Plaintiffs are proposing a definition of these terms only to rebut Defendants’ allegation that certain claims containing those terms are indefinite under 35 U.S.C. § 112 ¶ 2, but otherwise submit that construction is unnecessary.

Term	Plaintiffs	Defendants
20. Yield ‘224: 12	No construction is required. In the alternative, the term “yield” means the amount of a plant product.	“Increasing” and/or “enhancing” the yield means increasing the amount of food crop harvested per unit area of land. It is not measured on an individual plant.
21. Nitrogen effect ‘224: 12	The effect of nitrogen either washed out of the soil and into surrounding waters or released from the soil into the atmosphere.	The effect of nitrogen washed out of the soil and into surrounding waters
22. maintaining contact between the rhizosphere of the plant and the composition for a time sufficient to enhance yield of the plant while reducing nitrogen effect ‘224: 12	No construction is required. In the alternative, this term means maintaining the fertilizer composition in contact with the rhizosphere of the plant for any amount of time that is enough to increase the “yield” of the plant while reducing its “nitrogen effect.” (Defendants contend this term renders the claim indefinite. Plaintiffs contend this term is capable of being construed, and thus the claim is not indefinite)	See Term No. 23 herein.
23. a time sufficient to enhance yield of the plant while reducing nitrogen effect ‘224: 12	No construction is required. In the alternative, this term means any amount of time that is enough to increase the “yield” of the plant while reducing the “nitrogen effect” of the fertilizer composition when compared to the “nitrogen effect” of a non-	Applying the fertilizer composition at a time before harvest that is early enough for the fertilizer to cause an increase in the yield. For vegetables and rice, it is from planting to harvest. For other food plants, 30 days from budding to

Term	Plaintiffs	Defendants
	fertilizer. (Defendants contend this term renders the claim indefinite. Plaintiffs contend this term is capable of being construed, and thus the claim is not indefinite)	harvest.
24. sufficient amount of a fertilizer composition '224: 12	No construction is required. In the alternative, this term means any amount of a fertilizer composition that is enough to increase the "yield" of the plant without significantly increasing the "nitrogen effect" of the fertilizer composition when compared to the nitrogen effect of a non-fertilizer.	Means enough fertilizer to cause a measurable increase in plant yield.

Plaintiffs' definition of the term "yield" (Term No. 20) is consistent with the common, ordinary meaning of the term. Further, Plaintiffs' definition is similar to Defendants' definition, but without the artificial restrictions proposed by Defendants. Plaintiffs' definition, for example, covers all plant products, not just food. Plaintiffs' definition also covers any amount of a plant product, not merely an amount harvested from a particular unit area of land. Plaintiffs' definition also does not exclude an amount from an individual plant. Plaintiffs' definition is supported by the specification and the ordinary meaning of "yield."

The specification refers generally to maximizing and maintaining "plant yields" or "yield of a plant" (1:20-22, 1:27 and 5:50) and explains that an aspect of the invention relates to a "fertilizer composition for plant production" (3:45-46). The word "plants" covers a broad category that encompasses more than food-bearing plants, given that all plants are not food-bearing plants. The specification makes one specific reference to "food plants" in the following statement: "When fertilizer formulations of the present invention are applied to food plants, significant yield enhancements result and reductions in total nitrogen requirements can be

achieved.” (7:58-62.) In that sentence, the word “food” modifies “plants” so that “food plants” is clearly contemplated as a subset of the larger family of “plants.” But the claims are not restricted to “food plants” and, more significantly, the term yield is not limited to the sub-category of “food plants” but rather the term yield is used with the more general term “plants.” Indeed the term “yield” in Claim 12 of the ‘224 patent is expressly recited as “yield of a plant.” Defendants’ Expert, Dr. Kloepper, admitted that “yield” had a broader meaning that included any plant growth but stated that it “more typically” was a reference to crop yields. Exh. 4, Kloepper Dep. Tr. 9:5-14; 53:4-54:2.

Defendants’ definition is overly restrictive. Defendants’ definition incorporates extraneous limitations from the specification. First, by limiting yield to the “amount of food,” Defendants artificially exclude any non-food plant product (such as flowers). Second, by limiting yield to “the amount of food crop harvested per unit area of land,” and stating that “It is not measured on an individual plant,” Defendants create additional artificial restrictions. According to Defendants’ definition, only a fertilizer composition that is “harvested” and measured “per unit area of land” can provide a “yield,” which is nonsensical. In fact, that aspect of Defendants’ definition is directly contradicted by the specification, namely, the “Fruit Tree Yields” reported in Example 6 of the specification (see 24:40). The “yield” is measured as Bushels *per 100 Trees*. (See 24:40-25:4; Table 17, emphasis added.) The “yield” of fruit is not measured “per unit area of land.” Defendants’ definition is artificial and not warranted by the language in the claim itself or the specification.

Plaintiffs’ revised definition of “nitrogen effect” (Term No. 21) is now identical to Defendants’ definition, except that Plaintiffs’ new definition more broadly includes release of nitrogen into the atmosphere as a so-called “greenhouse gas.” Plaintiffs’ definition is consistent

with the specification. In Col. 1, lines 23-27, the specification states: “Nitrogen in the form of soluble nitrates is particularly harmful to the environment since nitrates readily leach out of soil and cause pollution of ground and surface waters.” (1:23-25.) Defendants’ claim construction expert, Dr. Joseph Kloepper, agreed that nitrogen could not only escape from the soil to the surrounding groundwater, but also be released to the environment as a “greenhouse gas” in the form of nitrous oxide. Exh. 4, Kloepper Dep. Tr. 56:25-57:15. Plaintiffs’ definition accommodates Dr. Kloepper’s testimony.

Plaintiff submits that Term No. 22 requires no construction, and is unnecessary to understand the claim or to apply it to the accused methods or the prior art. In the alternative, to the extent the term needs to be construed, Plaintiff submits the term “maintaining contact between the rhizosphere of the plant and the composition for a time sufficient to enhance yield of the plant while reducing nitrogen effect” (Term No. 22) should be defined as “maintaining the fertilizer composition in contact with the rhizosphere of the plant for any amount of time that is enough to increase the ‘yield’ of the plant while reducing the ‘nitrogen effect when compared to the nitrogen effect of a non-fertilizer.’” The definition closely follows the actual claim language but clarifies that the phrase “enhance yield” means “increase yield.” Also, the definition clarifies that nitrogen effect of the fertilizer composition is reduced as compared with the nitrogen effect of a non-fertilizer, which is consistent with Dr. Kloepper’s testimony. Exh. 4, Kloepper Dep. Tr. 66:4-23.

Plaintiffs’ definition is also consistent with how Defendants’ expert Dr. Kloepper explained his understanding of the term. During his deposition he explained that the “rhizosphere” of the plant is the sub-part of the root zone that is several millimeters from the root, and is often considered the “zone of influence” for the plant. Exh. 4, Kloepper Dep. Tr.

28:14-29:9; 97:20-98:23. He interpreted the term “maintaining contact” in Term No. 22 to mean that, after the fertilizer is applied to the rhizosphere, the fertilizer is left in that location for period of time that is sufficient to increase the yield of the plant. Exh. 4, Kloepper Dep. Tr. 64:20-65:13. To determine whether a particular fertilizer has increased the yield of a particular plant, it would be necessary to measure the yield of a similar plant using a non-fertilizer as a “control.” Exh. 4, Kloepper Dep. Tr. 66:15-23. Based on Dr. Kloepper’s testimony, which simply tracks the actual claim language, Plaintiffs submit that either Term No. 22 need not be construed, or it should be construed using Plaintiffs’ definition.

Plaintiffs submit that Term No. 23 (“a time sufficient to enhance yield of the plant while reducing nitrogen effect”) does not require any construction. Plaintiffs propose this definition only to refute Defendants’ allegation that particular claims are indefinite by reason of Term No. 23, an allegation set forth in their preliminary invalidity contentions. Defendants’ expert Dr. Kloepper, explained his understanding that the phrase “time sufficient” in Term No. 23 referred to the time period between the point in time when the fertilizer was applied to the soil in the rhizosphere and the point in time when the plant product was harvested. Exh. 4, Kloepper Dep. Tr. 64:20-65:13.

Plaintiffs submit that Term No. 24 (“sufficient amount of a fertilizer composition”) also does not require any construction. Plaintiffs submit that the term “sufficient amount” is a broad, functional term that is commonly used in patent claims. Conventionally, the term “sufficient” describes and modifies the amount of something (in this case, a fertilizer composition) in terms of a property that flows from, or is somehow caused by, the amount of the particular thing (e.g., fertilizer composition). Here, Term No. 24 is part of Claim 12 of the ‘224 patent; which recites a causal relationship between the supplying of the fertilizer composition to the rhizosphere and the

increase in yield without significantly increasing the nitrogen effect. Exh. 4, Kloepper Dep. Tr. 66:24-67:21. Logically, it is contemplated that a very small amount of fertilizer (e.g., a few grains) would have no effect on plant growth or yield, but a larger amount (e.g., 10 grams) would increase yield. Using Term No. 24, the claim is broadly drafted to capture any amount that results in an increase in yield, when compared to the yield resulting from application of a non-fertilizer. Although Plaintiffs submit no construction is required, to the extent Term No. 24 is construed, it should be defined as “any amount of a fertilizer composition that is enough to increase ‘yield’ without significantly increasing the ‘nitrogen effect.’”

F. Actinomycetes and Nitrogen-Fixing Bacteria (Disputed Terms Nos. 25-27):

The three disputed terms in Group F (Terms Nos. 25, 26 and 27) involve the fertilizer application method claim 14 of the ‘224 patent, which recites increasing the concentration of bacteria known as actinomycetes and nitrogen-fixing bacteria. Defendants have alleged that the method claim is indefinite by virtue of Term No. 27.

Term	Plaintiffs	Defendants
25. effective amount ‘224: 14	Needs no construction. In the alternative, this term means any amount of the fertilizer composition that when introduced to the rhizosphere of a plant contributes to an increase in the concentration of either <i>actinomycetes</i> or nitrogen fixing bacteria in the rhizosphere.	Same as sufficient amount (see above)
26. effective amount of a fertilizer composition ‘224: 14	Needs no construction. In the alternative, this term means any amount of the fertilizer composition that when introduced to the rhizosphere of a plant contributes to an increase in the concentration of	Means enough fertilizer to cause a measurable increase in plant yield.

Term	Plaintiffs	Defendants
	either <i>actinomyces</i> or nitrogen fixing bacteria in the rhizosphere.	
27. time sufficient to increase concentration of non-<i>bacillus</i> beneficial organisms in the rhizosphere '224: 14	This term means any amount of time that is enough for an increase in the concentration of either <i>actinomyces</i> or nitrogen fixing bacteria in the rhizosphere. (Defendants contend this term renders the claim indefinite. Plaintiffs contend this term is capable of being construed, and thus the claim is not indefinite)	Indefinite.

Plaintiffs will begin with an analysis of Term No. 27, because that is the term that Defendants challenge as indefinite. Plaintiffs submit that Term No. 27 (“time sufficient to increase concentration of non-*bacillus* beneficial organisms in the rhizosphere”) should be construed for at least two reasons. One, construing the term will refute Defendants’ allegation that the term (and claim 14) is indefinite. Two, construing the term will help the jury properly interpret (and apply) the phrase “non-*bacillus* beneficial organisms” to the accused products and prior art.

Plaintiffs define Term No. 27 as “any amount of time that is enough for an increase in the concentration of either *actinomyces* or nitrogen fixing bacteria in the rhizosphere.” In claim 14, that “time” limitation modifies the phrase “applying an effective amount of a fertilizer composition,” so that the method recites applying fertilizer “for a time sufficient to increase concentration ...” Plaintiffs submit that when the “time” and “applying” clauses are read in conjunction, they mean that, once fertilizer is introduced to a plant rhizosphere, that fertilizer is

maintained in the rhizosphere for a period of time sufficient for the “non-bacillusbeneficial organisms in the rhizosphere” to increase in concentration.

Next the question is how to construe the phrase “non-*bacillus* beneficial organisms.” Because that phrase is written as an artificial “Markush group,” and because *actinomyces* and nitrogen fixing bacteria are the only members of that artificial group then, as a matter of well-settled law, that phrase (“non-*bacillus* beneficial organisms”) simply means *actinomyces* and nitrogen fixing bacteria, nothing more and nothing less. See, e.g., *Abbot Labs. et al v. Baxter Pharm. Prods., Inc. et al.*, 334 F.3d 1274, 1280-81 (Fed. Cir. 2003) (stating, “A Markush group is a listing of specified alternatives of a group in a patent claim, typically expressed in the form: a member selected from the group consisting of A, B, and C”; and concluding, “the applicant expressly defined the claim term ‘Lewis acid inhibitor’ as a member of the recited Markush group”). Accordingly, there is no need for the Court to construe, discuss or analyze the artificial name of the group (“non-*bacillus* beneficial organisms”) or to resolve whether the terms “beneficial” or “organisms” are themselves ambiguous or indefinite.⁹

Nevertheless, Plaintiff submits the terms “beneficial” and “organisms” are not ambiguous, particularly in view of the claim as a whole, and the specification. Even in isolation, those terms are merely broad. In his deposition, Dr. Kloepper testified that the terms “beneficial” and “organisms” were ambiguous, but he later admitted they were actually broad terms. Exh. 4, Kloepper Dep. Tr. 71:20-21; 71:23-73:18. For example, he testified that he considered the term “organisms” to broadly encompass other living things such as earthworms and insects. Exh. 4, Kloepper Dep. Tr. 70:25-71:25. But interpreting “organisms” that broadly would be contrary to the entire patent specification, which refers to beneficial microorganisms.

⁹ Defendants’ expert, Dr. Kloepper, for example, indicated that he considered the terms “beneficial” and “organisms” to be ambiguous, or at least very broad. See Exh. 4, Koeppler Dep. Tr. 32:11-15, 70:5-73:18.

specifically, “*actinomycetes*” and “nitrogen fixing bacteria,” not larger organisms such as earthworms and insects. Also, the claim itself refers to “*actinomycetes*” and “nitrogen fixing bacteria,” which are both microorganisms with which Dr. Kloepper was familiar. Exh. 4, Kloepper Dep. Tr. 72:20-73:9. He also admitted that at least certain *actinomycetes* and nitrogen fixing bacteria were “beneficial” to the plant, in that they either promoted plant growth or protected the plant from disease. Exh. 4, Kloepper Dep. Tr. 31:6 – 32:16; 34:7-13. Accordingly, to the extent the Court construes the claim term “non-bacillus beneficial organisms” to mean “beneficial *actinomycetes* or nitrogen fixing bacteria,” then Plaintiffs request that the Court define “beneficial” as “capable of providing a benefit to the plant.” Accordingly, any alternative definition of Term No. 27 should incorporate the definition of “non-bacillus beneficial organisms” as “*actinomycetes* and nitrogen fixing bacteria that benefit the plant.”

To the extent it needs to be defined, the term “concentration” means the population of the specified bacteria. The specification states that in preferred embodiments, “it is advantageous to use strains (of *Bacillus* species) that produce significant increases *in the populations* of *Actinomycetes* and nitrogen-fixing bacteria within the rhizosphere.” (9:18-20, emphasis added.) Furthermore, Dr. Kloepper testified that he interpreted “concentration” as “population” where the numerator would be a colony forming unit (“cfu”) and the denominator would be the weight of the soil in the rhizosphere. Exh. 4, Kloepper Dep. Tr. 77:4-88:15.

Finally, to the extent construction of the other terms is required, i.e., “effective amount” (Term No. 25) and “effective amount of a fertilizer composition” (Term No. 26) each of those terms should be construed to mean any amount of fertilizer composition that, when added to a rhizosphere of a plant, results in an increase in the concentration of *actinomycetes* or nitrogen fixing bacteria. As with Terms Nos. 23 and 24 (“sufficient amount” and “sufficient amount of a

fertilizer composition”) Term No. 25 (“effective amount”) is a broad, functional term that is commonly used in patent claims. In *Minn. Mining and Mfg. Co. v. Chemque, Inc.*, 303 F.3d 1294, 1299 (Fed. Cir. 2002), for example, the court construed the term “effective amount” to mean “a sufficient amount of the specified component to form an encapsulant having the specified properties under the specified conditions. As with the term “sufficient amount,” the term “effective amount” describes and modifies the amount of something (in this case, a fertilizer composition) in terms of a property that flows from, or is somehow caused by, the amount of the particular thing. Here, Term No. 25 is part of Claim 14 of the ‘224 patent; which recites some causal relationship between the supplying of the fertilizer composition to the rhizosphere and an increase in the concentration of at least one of two particular types of non-*bacillus* beneficial organisms in the rhizosphere. Certainly, a very small amount of fertilizer to the rhizosphere (e.g., a few grains) would have no effect on the concentration of particular types of non-*bacillus* beneficial organisms, and thus would not be considered an “effective amount,” but some larger amount (e.g., 1 pound) would be expected to have such an effect. Using Term No. 25, the claim is broadly drafted to capture any amount that results in an increase in the concentration of the particular recited beneficial organisms. Although Plaintiffs submit no construction is required, to the extent Term No. 25 is construed, it should be defined as “any amount of a fertilizer composition added to the rhizosphere that results in an increase in the concentration of *actinomycetes* or nitrogen fixing bacteria in that rhizosphere.”

VII. CORRECTION OF TYPOGRAPHICAL ERRORS:

As noted above, the parties have agreed to correct typographical errors of certain terms in the claims, namely, the following terms (Agreed Terms Nos. 7-10 in the PR 4-2 Claim Construction submission):

7.	rhizospherer (‘994, claim 27)	This term means “rhizosphere”
8.	non-<i>bacillus</i>organisms (‘224, claim 14)	This term means “non- <i>bacillus</i> organisms”
9.	non-<i>bacillus</i>beneficial organisms (‘224, claim 14)	This term means “non- <i>bacillus</i> beneficial organisms”
10.	<i>Bacillus</i>spores (‘224, claim 14)	This term means “ <i>Bacillus</i> spores,” as construed separately.

In accordance with the law concerning correction of certain types of patent errors, discussed above, Plaintiffs request that this Court include in its Claim Construction order the above-mentioned definitions. Plaintiffs submit that correction of these terms complies with the Federal Circuit’s ruling in *Ultimax Cemen*, 587 F.3d at 1353. Specifically, the requested correction is not subject to reasonable debate to one of ordinary skill in the art, and that the claim language, specification, and prosecution history do not suggest a different interpretation, then a court can correct an obvious typographical error.

VIII. CONCLUSION:

Plaintiffs’ claim constructions are supported by the claim language, the specification and the prosecution history of the patents-in-suit. Accordingly, Plaintiffs’ constructions should be adopted. Defendants’ claim constructions are not supported by the intrinsic record, and should be rejected.

Respectfully submitted,

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CERTIFICATE OF SERVICE

The undersign hereby certifies that all counsel of record who have consented to electronic service are being served with a copy of this document via the Court's CM/ECF system per Local Rule CV-5(a)(3) on this 7th day of February, 2011. Any other counsel of record will be served by U.S. First Class Mail.

/s/ Douglas H. Elliott
Douglas H. Elliott